

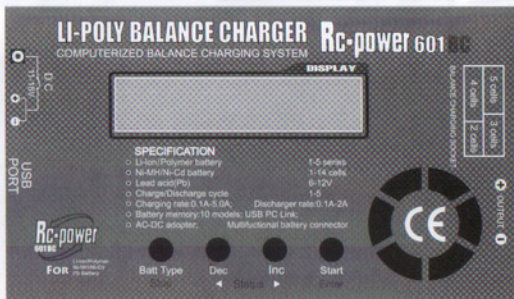
Operating Manual

R/C POWER

601BC

Microprocessor controlled high-performance rapid charger/discharger for NiCd/NiMH/Li-poly/Pb batteries with cell voltage balancer.

Charge current up to 5A, 1 to 5 series of Li-ion/poly, 1~14 cells of NiCd/NiMH, 6 to 12V lead acid(Pd)



* We reserve the right to commit modifications.
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Thank you for purchasing the RC-power 601BC. You get a rapid charger that is computerized with a high performance microprocessor and specialized operating software. It can maintain your battery at its best condition and also control them safety. Please read this entire operating manual completely and attentively as it contains a wide variety of specific programming and safety information. You need to keep this manual in a safe place, and be sure to pass it on to the new owner if you ever dispose of RC-POWER 601BC.

Special features

-Voltage balancer for Li-polymer battery

BC has an individual-cell-voltage balancer inside. So it does not need any balancer separately when charging Li-poly battery for cell balancing.

-Maximum safety

Delta-peak sensitivity: The automatic charge termination program works on the principle of the Delta-peak voltage detection.

Capacity limit: The charging capacity always calculated by multiple of the charging current and time. If the charging capacity exceeds the limit the process will be terminated automatically when you set the maximum value.

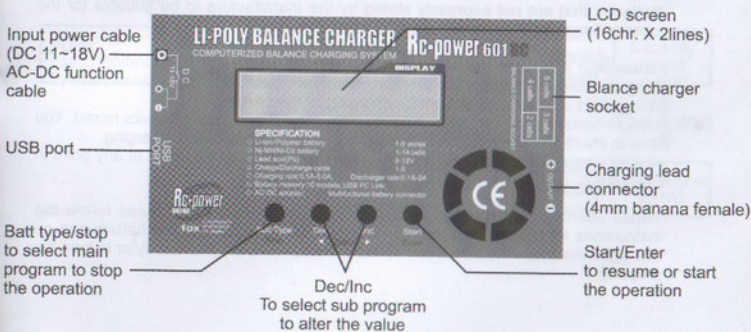
Temperature limit: The temperature of the battery on charging will rise by its internal chemical reaction. If you set the limit of temperature the process will be expired forcibly when the limit has reached.

Processing time: You can also restrain the maximum process time to prevent from any possible defect.

Input power monitor: To protect the car battery using as input power from being damaged the voltage of it always monitored. If it drops below the lower limit the process will be ended automatically.

-High-power and high-performance circuit

BC employs the circuit that has maximum output power of 50W. As a result it can charge or discharge up to 14 cells of NiCd/NiMH and 5 series of Li-poly batteries with maximum current of 5.0A.



● Warnings and safety notes

- Never leave the charge unsupervised when it is connected to its power supply. If any malfunction is observed immediately terminate the process and refer to the operation manual.
- Keep away the unit from dust, damp, rain, heat direct sunshine and vibration. Do not drop it.
- This unit and the battery to charge or discharge should be set up on a head resistant, non-inflammable and non-conductive surface. Never place them on a car seat, carpet or similar.
- Keep all the inflammable volatile materials well away from operating area. Be sure to understand the information of the battery to be charged or discharged accurately. If the program is set up incorrectly the battery can severely be damaged.
- Especially Lithium battery can cause a fire or an explosion by over-charging.

To avoid short-circuits between the charge lead, always connect the charge cable to the unit first and only then to the battery to be charged or discharged. Reverse the sequence when disconnecting.

Do not connect more than one battery pack to the charge lead at any one time.

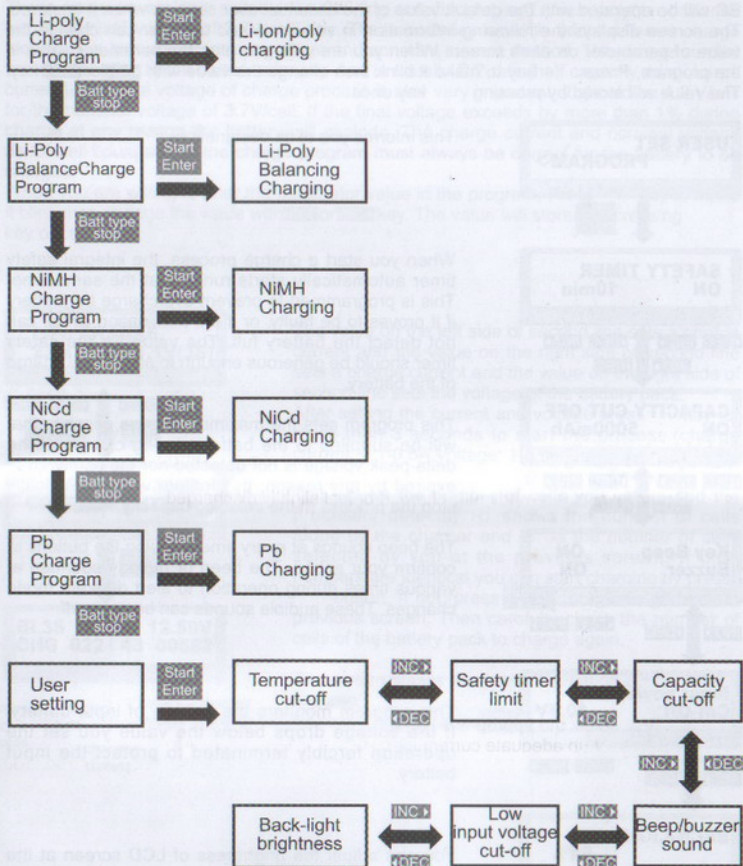
- Do not attempt to charge or discharge the following types of battery.
 - Battery pack, which consists of different types of cell(including different manufacturers).
 - Battery, which is already fully charged or just slightly discharged.
 - Non-rechargeable batteries (Explosion hazard).
 - Batteries that require a different charge technique from NiCd, NiMH, Li-Poly or Pb.
 - Faulty or damaged battery.
 - Battery fitted with an integral charge circuit or a protection circuit.
 - Batteries installed in a device, or which are electronically linked to other components.
 - Batteries that are not expressly stated by the manufacture to be suitable for the currents the charger delivers during the charge process.

Please bear in mind of checking the following point before charge operation.

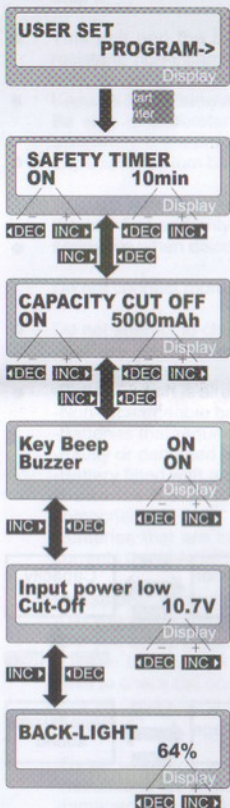
- Did you select the appropriate program, which are suitable for the type of battery?
 - Did you set up adequate current for charging or discharging?
- Lithium battery pack can be composed with parallel and series circuits mixed. You have to check the composition of the battery pack carefully before charging.
 - Are all connections firm and safe, or is there an intermittent contact at any point in the circuit?

Those warnings and safety notes are particularly important. Please follow the instructions for a maximum safety; otherwise the charger and the battery can be damaged violently. And also it can cause a fire to injure a human body or to lose the property.

● Program flow chart



BC will be operated with the default value of the essential user settings when it is started. The screen displays the following information in sequence and the user can change the value of parameter on each screen. When you are willing to alter the parameter value in the program, Press **ENTER** key to make it blink then change the value with **◀DEC** or **INC▶** key. The value will stored by pressing **ENTER** key once.



This informs you of its designation

When you start a charge process, the integral safety timer automatically starts running at the same time. This is programmed to prevent overcharge the battery if it proves to be faulty, or if the termination circuit can not detect the battery full. The value for the safety timer should be generous enough to allow a full charge of the battery.

This program sets the maximum charge capacity that will be supplied to the battery during charge. If the delta-peak voltage is not detected nor the safety timer expired by any reason, this feature will automatically stop the process at the selected capacity value.

The beep sounds at every time pressing the buttons to confirm your action. The beep or melody sounded at various times during operation to alert different mode changes. These audible sounds can be on or off.

This program monitors the voltage of input battery. If the voltage drops below the value you set the operation forcibly terminated to protect the input battery.

You can adjust the brightness of LCD screen at the charger.

These programs are only suitable for charging and discharging Lithium-polymer batteries with a nominal voltage of 3.7V/cell only. These batteries need to adopt different charge technique is termed a constant voltage and constant current method. The charge current varies according to the battery capacity. And is usually C/2 rate (half capacity as a charge current). The final voltage of charge process is also very important; it should be 4.2 V/cell for the nominal voltage of 3.7V/cell. If the final voltage exceeds by more than 1% during charge at any reason the battery will explode. The charge current and nominal voltage as for cell count set on the charge program must always be correct for the battery to be charged.

When you are willing to alter the parameter value in the program, Press **Start** key to make it blink then change the value with **DEC** or **INC** key. The value will stored by pressing key once.

LiPo CHARGE
2.0a 11.1V(3S)
 Display

DEC INC **DEC INC**
Batt type stop **Start Enter**

S : 3SER R : 3SER
CONFIRM(ENTER)
 Display

Start Enter

BL3S 1.2A 12.59V
CHG 022 : 43 00682
 Display

number charging battery charged
of cells time voltage capacity
charging current

The value on the left side of second line sets a charge current and the value on the right side of second line sets a charge current and the value on the right side of second line sets the voltage of the battery pack.

After setting the current and voltage press **Start** key for more than 3 seconds to start the process.(charge current: 0.1-0.5A,Voltage: 1-5 series)

This shows the number of cells you set up and the processor detects, 'R:' shows the number of cells found by the charger and 'S:' is the number of cells selected by you at the previous screen. If both numbers are identical you can start charging by press **Start** button. If not, press **Batt type stop** button to go back to previous screen. Then carefully check the number of cells of the battery pack to charge again.

The screen shows the present situation during charge process.

To stop charging press **Batt type stop** key once.

● Charging LI-Poly battery at balancing mode

This is for balancing the voltage of lithium batteries of the battery pack to be charged. To do this, the battery pack being charge should have the individual cell connector. And connect it to the individual port at the right side of charger. You do not need connect the battery output jack to the output of charger at this program.

In this mode, the charging process will be different from ordinary charging mode. The internal processor of the charge will monitor the voltage of each cell of the battery pack and control the charging current feeding to each cell to normalize the voltage.

LiPo CHARGE
2.0a 11.1V(3S)
Display

←DEC INC→ ←DEC INC→
Batt type stop Start Enter

S : 3SER R : 3SER
CONFIRM(ENTER)
Display

Start Enter

BL3S 1.2A 12.59V
CHG 022 : 43 00682
Display

number charging battery charged
of time voltage capacity
cells charging current

The value on the left side of second line sets a charge current and the value on the right side of second line set the voltage of the battery pack..

After setting the current and voltage press **Start Enter** key for more than 3 seconds to start the process.

(Charge current: 0.1~0.5A, Voltage: 1~5 series)

This shows the number of cells you set up and the processor detects. 'R:' shows the number of the cells found by the charger and 'S : 'is the number of cells selected by you at the previous screen> if both numbers are identical you can start charging by press **Start Enter** button. If not, press **Batt type stop** button to go back to previous screen. Ten carefully check the number of cell of the battery pack to charge again.

The screen show the present situation during charge process. To stop charging press **Batt type stop** key once.

● Inquiry the voltage of individual cells

You can monitor the present voltage of individual cell by pressing **DEC** or **INC** button during the process.

4.17V 4.17V 4.19V
0.4A 0.00V 0.00V
Display

The first line of display shows the voltage of no.1 cell, no.2 cell and no.3 cell from the left. And the left of second line shows the charging current. The next shows the voltage of no.4 and no.5 cell.

● Ni-MH/NiCd battery charging program

These programs are for charging NiMH(Nickel-Metal-hydride) or NiCd(Nickel-Cadmium) battery commonly used for R/C model applications.

To change the charging current, press **key** to make it blink then change the value using **DEC** or **INC** key. The value will be store by pressing **key** once.

To start charging, press **button** for more than 3 seconds.

NiMH CHARGE
CURRENT 2.0A

Display

← DEC INC →

Batt type stop

Start Enter

NiMH 2.0A 7.42V
CHG 022 : 45 00890

Display

battery charging battery charged
type time voltage capacity
charging
current

This program simply charges the battery using the current you set. The charge current ranges from 0.1 to 5.0A.

The screen displays the current state of charging. To stop the process, press **Batt type stop** key once.

The audible sound indicates you the end of process.

● Pb(lead-sulphuric acid) battery charging program

This is programmed for charging Pb(lead-acid) battery with nominal voltage from 2 to 12V. Pb batteries are totally different from NiCd or NiMH batteries. They can only deliver relatively lower current compare to their capacity, and similar restrictions definitely apply to charge. So the optimal charge current will be 1/10 of the capacity. Pb batteries must not be charged rapidly. Always follow the instruction is supplied by the manufacturer of battery.

Pb CHARGE
4.0A 12.0V

Display

← DEC INC →

Batt type stop

Start Enter

Pb6S 4.0A 12.59V
CHG 022 : 43 00682

Display

charging battery charged
time voltage capacity
charging
current

Set up the charge current on the left and the nominal voltage of the battery on the right. The charge current ranges from 0.1 to 5.0A and the voltage should match with the battery being charged.

Start the charge process by pressing **key** for more than 3 seconds.

The screen displays the state of charging process. To stop charging forcibly, press **Batt type stop** key once.

The audible sound indicates you the end of process.

601BC incorporates a various functions of protective and monitoring the system to verify functions and the state of its electronics. In any case of occurring error, the screen displays the cause of error that is self-explanatory with audible sound.

Reversed polarity

Display

The output is connected to a battery with incorrect polarity.

Connection break

Display

This will be displayed in case of detecting an interruption of the connection between battery and output or voluntarily disconnecting the charge lead during the operation of charge or discharge on output.

SHOT ERR

Display

There was a short-circuit at OUTPUT.

IN Voltage ERR

Display

The voltage of input power lowers the limit.

VOL SELECT ERR

Display

The voltage of Lithium battery pack was selected incorrectly. Verify the voltage of battery pack carefully.

BREAK DOWN

Display

There happens malfunction at the unit by any reason.

**BATTERY CHECK
LOW VOLTAGE**

Display

The processor detects the voltage difference during charging.

**BATTERY CHECK
OVER VOLTAGE**

Display

The processor detects the voltage difference during charging.

BATTERY VOL ERR

Display

The voltage of one of the cell in the Li-poly battery pack raised over the limit.

● Specifications

Operating voltage range:	11.0 ~ 18.0 Volt
Circuit power:	max. 50W
Charge current range:	0.1 ~ 5.0A
Current drain for balancing Li-po:	200mAh/cell
NiCd/NiMH battery cell count:	1 ~ 14 cell
Li-Ion/Polymer cell count:	1 ~ 5 series
Pb battery voltage:	2 to 12V
Weight:	350 g
Dimensions:	130 X 90 X 28 mm